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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/542,995

03/31/2006

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330-028

1184

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07/09/2008

EXAMINER

BENNETT, TYLER N

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

07/09/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/542,995	<b>Applicant(s)</b> DUKE, MIKE DAVID	
	<b>Examiner</b> TYLER N. BENNETT	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 17-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/18/2006</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 19 and 29 recite the limitation "the angle of slope" in lines 1-2 of the claims. There is insufficient antecedent basis for this limitation in the claims.
3. Claims 22 and 32 recite the limitation "the solar panel junction box" in line 2 of the claims. There is insufficient antecedent basis for this limitation in the claims.
4. Claim 23 recites the limitation "the front thinner end" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.
5. Claim 26 recites the limitation "the base flange" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.
6. Claim 33 recites the limitation "the front thinner end thin end" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.
7. Claim 38 recites the limitation "mountings" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1795

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 17-21, 23, 25, 27-31, 33, 35, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US 2002/0066828 A1) and further in view of Dinwoodie (US 5,746,839, cited in Applicant's IDS).

As to claim 17, the reference teaches a mounting for solar panels (unit solar cell module, #21, Fig. 2B and [0111]) which mounting comprises:

- a frame (frame body, #26, Fig. 4 and [00119]) having a recess for receiving at least one solar panel (accommodating space for module, #27, Fig. 4, [0119]);
- the frame having a front edge (right edge of protruding portion of module, #31, Fig. 21 and [0137]) and a rear edge (left edge of module, Fig. 21 and [0137]) in which the front edge is narrower than the rear edge (right edge of protruding portion of module, #31, is narrower than left edge of module, Fig. 21);
- the front edge of one frame is adapted to fit beneath and inside the rear edge of another frame (protruding portion, #31, of left module, #21a, is adapted to fit into the recessed portion, #32, of right module and the

recessed portion is beneath and inside of the rear/left edge of the right module, Fig. 21 and [0138]) and to be attached to the other frame (solar cell modules are linked, and thus attached [0138]); and

- the frame having side fixing means (screw members, #40, Fig. 8 and [0123]) so that a plurality of frames can be attached to each other in a side-by-side arrangement (Fig. 7,8 and [0123]);

The reference is silent as to the frame sloping upwards from the front to the back.

It is well known in the art of roofing assemblies for solar cells to have a frame that slopes upwards from the front to the back, as shown by Dinwoodie (spacer with tapered profile, #350, Fig. 3C and 7:6) wherein the tapered profile helps to orient the solar module in the direction of increased sun exposure (7:5-6).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the frame of Nakamura et al. slope upwards from the front to the back, as shown by Dinwoodie, because doing so results in a solar module with increased sun exposure and therefore improved electric conversion efficiency.

Regarding claim 27, Nakamura et al. teach a solar panel in the recess (solar cell modules are fitted into the accommodating spaces of the frame body [0139]).

Regarding claim 18, Nakamura et al. teach that the frame is made of a plastics material [0119]. The examiner notes that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself (see MPEP 2113).

Regarding claims 19 and 29, Nakamura et al. in view of Dinwoodie teaches that the angle of slope of the mounting and solar module is 5-12 degrees (Dinwoodie, 8:49).

Regarding claims 20 and 30, Nakamura et al. is silent as to an aperture in the upper surface of the frame to enable pressure above and below the frame to be equalized.

It is known in the art of roofing assemblies for solar cells to have an aperture in the upper surface of the frame (cavity beneath module, #306 and above insulation block, #340, Fig. 3C and 7:10-23) to enable pressure above and below the frame to be equalized (7:19-23), as shown by Dinwoodie, wherein the equilibration of air pressures between the top and bottom side of module reduces the net forces of wind uplift (7:20-23).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the apertures of Dinwoodie in the upper surface of the frame of Nakamura et al. because doing so would reduce the net forces of wind uplift, as taught by Dinwoodie, resulting in a solar module roofing assembly with improved stability and an eliminated need for roof membrane penetrations for hold-down (3:19-23).

Regarding claims 21, 31 and 37, Nakamura et al. teach that the recess in the top of the mounting is of a size to allow a standard PV panel module to fit into the recess (solar cell module, #21, fits into recess between support portions, #35, attached to frame body, #26, Fig. 14B and [0128]) and the top of the PV panel is flush with the top

surface of the mounting (top of solar cell module, #21, is flush with top of support portions, #35, Fig. 14B and [0128]).

Regarding claims 23 and 33, Nakamura et al. teach that the back of the mounting has an opening (recessed portion #32, Fig. 21 and [0137]) and a lip (edge above recessed portion, Fig. 21, see attached definition of "lip" provided by Oxford English Dictionary) so that the front thinner end (protruding portion, #31, Fig. 21 [0137]) can be inserted into the opening and fixed in place (protruding portion and the recessed portion are linked to one another and fastened, [0138-0139]).

Regarding claims 25 and 35, Nakamura et al. teach that the front end of the frame has a flange (protruding portion #31, Fig. 21 and [0137], see attached definition of "flange" provided by the American Heritage Dictionary) to allow a covering (area above recessed portion, #32, Fig. 21) to be overlapped with the flange so that the flange is firmly held to a surface (protruding portion is held into place via contact with surfaces of recessed portion, Fig. 21 and [0138-0139]).

Regarding claim 28, Nakamura et al. teach that the solar panel is fixed to the mounting with screws through the underside of the mounting (screw member, #40, fastens unit solar cell module, #21, to frame body, #26, Fig. 8 and [0123]).

Regarding claim 38, Nakamura et al. teach a solar array (solar panel, #20, Fig. 6 and [0122]) comprising a plurality of solar modules (solar cell modules, #21, Fig. 6 and [0122]) in which mountings are connected together (Fig. 6 and [0122]).

Regarding claim 39, Nakamura et al. teach a solar array (solar panel, #20, Fig. 6 and [0122]), but is silent as to a support surface on which is mounted the solar array.

It is known in the art of solar arrays to mount the solar array on a support surface, as shown by Dinwoodie, wherein the solar array (array of modules, 4:25) is mounted on a roofing membrane (#102, Fig. 1A and 4:16).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to mount the solar array of Nakamura et al. on the roofing membrane of Dinwoodie et al., because doing so allows for the user to transport electricity from a building rooftop, as shown by Dinwoodie et al. (2:50-52).

11. Claims 22, 24, 26, 32, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US 2002/0066828 A1) and Dinwoodie (US 5,746,839, cited in Applicant's IDS) as applied to claim 17 above and further in view of Yamawaki et al. (US 2002/0036010 A1).

As to claims 22 and 32, Nakamura et al. in view of Dinwoodie teach a plurality of connection wires (Nakamura et al., #23, Fig. 20 and [0108]) for connecting the solar cells, but is silent as to a space in the recess to accommodate the solar panel junction box on the underneath of the solar module containing solar panels, with holes for wiring from the junction box to inside the mounting.

It is known in the art of solar cell modules for a roof to include a space in the recess (rectangular terminal-box storing recess, #3 in recess for photovoltaic module, #2, Fig. 1A and [0057]) to accommodate the solar panel junction box (terminal box #7, Fig. 11) on the underneath of the solar module containing solar panels (terminal box #7 is beneath photovoltaic cell module, #6, Fig. 11), with holes (cable lead-out hole #3a,



Fig. 1A and [0057] for wiring from the junction box to inside the mounting (cable #8 is lead out of the cable lead-out hole #3a, Fig. 4 [0062], as taught by Yamawaki et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the space in the recess to accommodate the solar panel junction box on the underneath of the solar module containing solar panels, with holes for wiring from the junction box to inside the mounting of Yamawaki et al. in the mounting of Nakamura et al. in view of Dinwoodie, because doing so allows for plurality of photovoltaic cell modules to be electrically connected to each other, as taught by Yamawaki et al. [0067].

Regarding claims 24, 26, 34 and 36 Nakamura et al. in view of Dinwoodie are silent as to drainage channels on the base of the mounting and the base flange to allow water to flow from under the mounting.

It is known in the art of solar cell modules for a roof to include drainage channels on the base of the mounting (drains, 4a-c, on bottom of recess #2, Fig. 1A and [0058]) to allow water to flow from under the mounting [0058-0059]), as taught by Yamawaki et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the drainage channels of Yamawaki et al. in the base of the mounting and base flange of Nakamura et al. in view of Dinwoodie, because doing so would allow water to flow from under the mounting, as taught by Yamawaki et al. [0058-0059], thus reducing the chance of a short circuit and loss of electricity.

***Correspondence/Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TYLER N. BENNETT whose telephone number is (571)270-5260. The examiner can normally be reached on Mon-Thurs 0830-1800.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. N. B./  
Examiner, Art Unit 4132

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795